



# INSTALLATION BEST PRACTICES



## FOR HOTflow™ HEATERS

### ✓ RETURN PORT

- ✓ Select a **return** port toward the rear of the engine.
- ✓ Select a **return** port away from the engine thermostat.
- ✓ Select a **return** port away from the **supply** port.

### ✓ SUPPLY PORT

- ✓ Select a **supply** port toward the front of the engine.  
*For V-type engines, it is acceptable to select a supply port on the side of the engine opposite the heater as long as the supply hose is routed properly.*
- ✓ Select a **supply** port away from the **return** port.

### ✓ HEATER MOUNTING

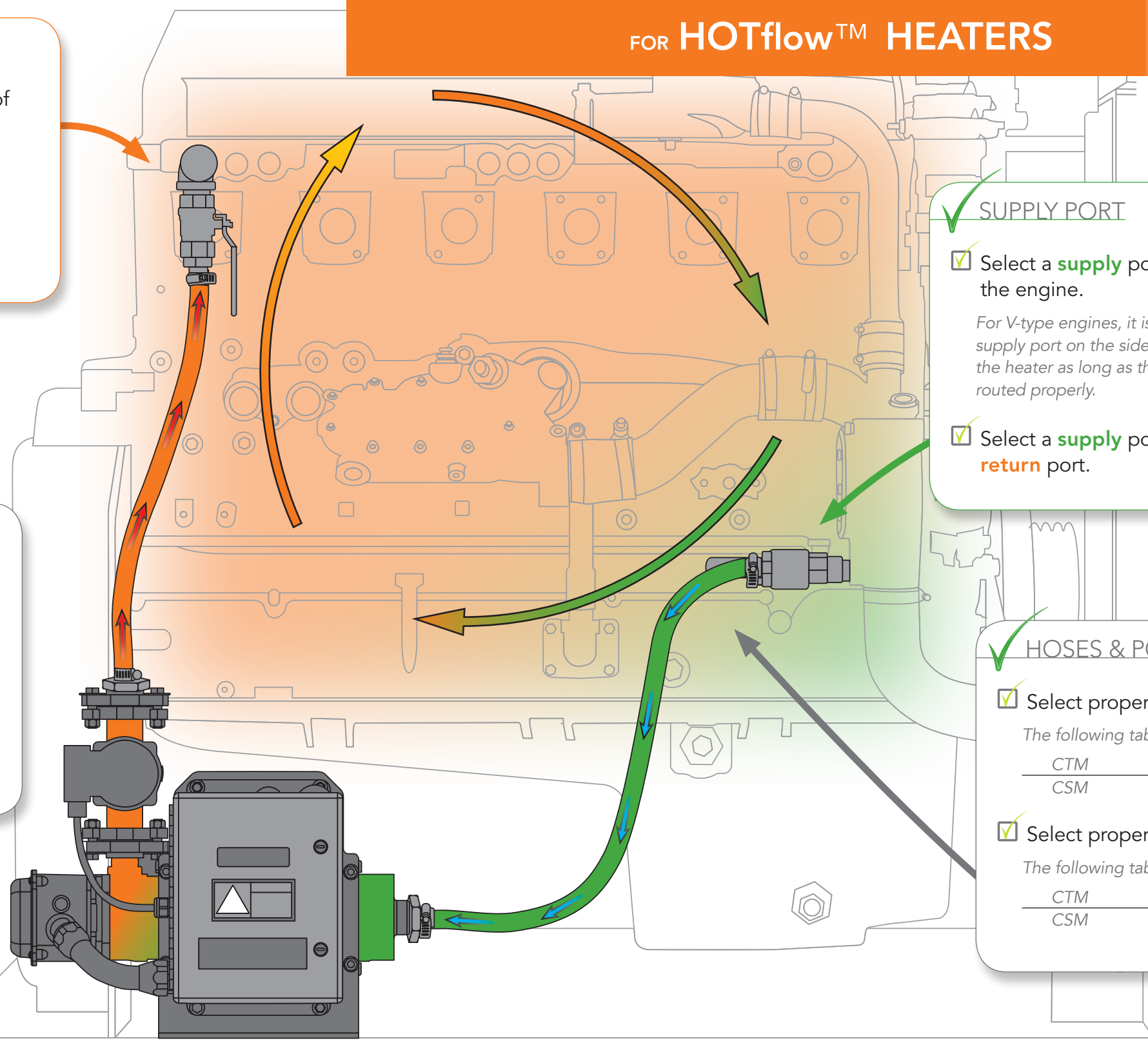
- ✓ Mount the heater in the proper orientation.
- ✓ Mount the heater to a vibration-isolated surface.
- ✓ Mount the heater at least 6 inches (15 cm) below the lowest point of the water jacket.

### ✓ HOSES & PORTS

- ✓ Select proper port fittings.  
*The following table shows the minimum port size fittings:*

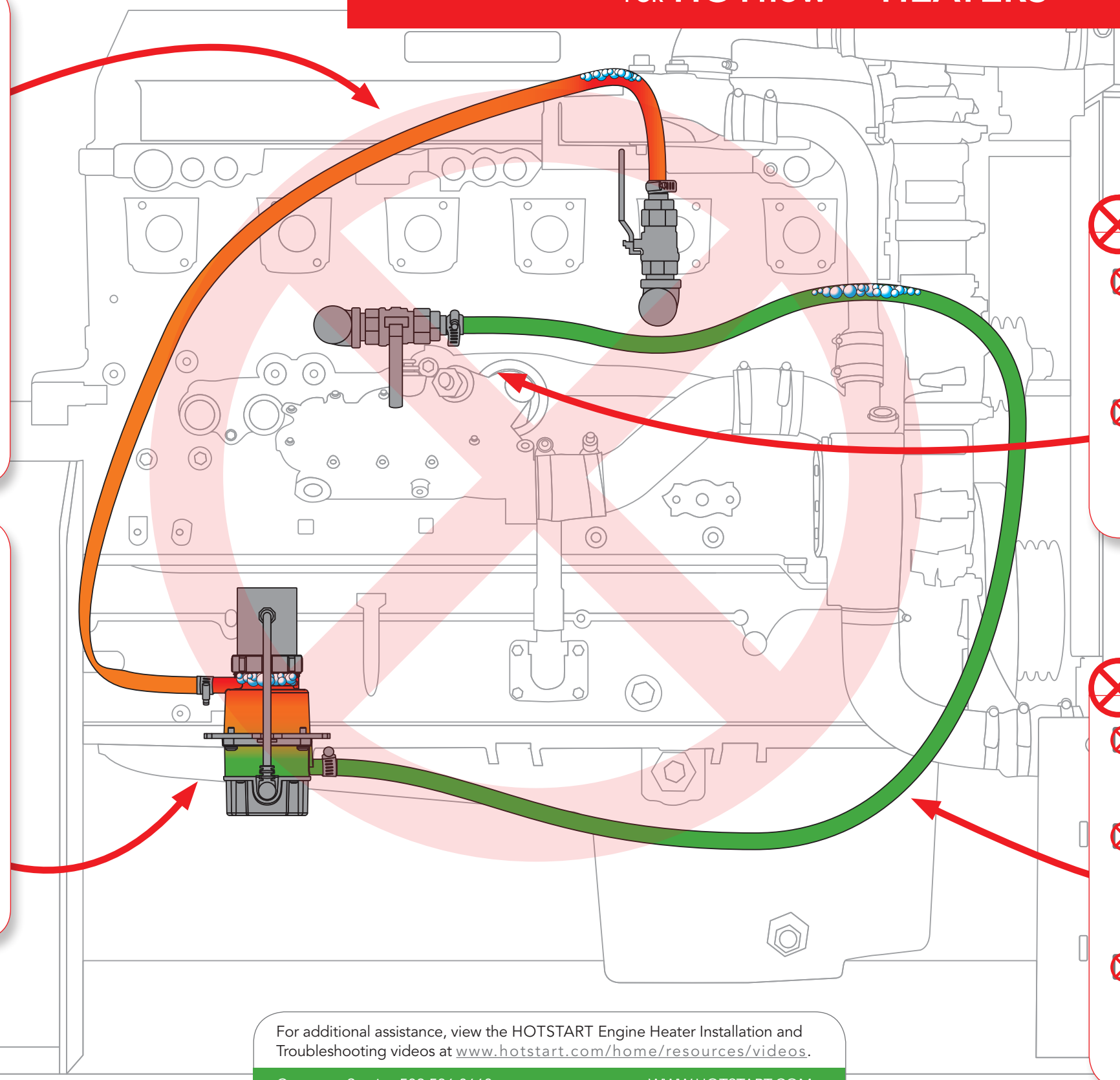
CTM	1000–2500 watts	3/8 inch NPT
CSM	3000–12000 watts	3/4 inch NPT
- ✓ Select proper hose inner diameter sizes.  
*The following table shows the minimum hose inner diameters:*

CTM	1000–2500 watts	5/8 inch
CSM	3000–12000 watts	1 inch



For additional assistance, view the HOTSTART Engine Heater Installation and Troubleshooting videos at [www.hotstart.com/home/resources/videos](http://www.hotstart.com/home/resources/videos).  
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### FOR HOTflow™ HEATERS




#### RETURN PORT

-  **Return** port is installed toward the front of the engine.

*A return port too close to the front of the engine will reduce heating effectiveness.*


-  **Return** port is too close to the engine thermostat.

*A return port installed too close to the engine thermostat can cause heated coolant to flow to the radiator, reducing heating effectiveness.*


-  **Return** port is too close to the **supply** port.

*A return port too close to the supply port will cause heated coolant to flow through only a small portion of the engine.*


#### HEATER MOUNTING

-  Heater is mounted upside down.

*An incorrectly oriented heater will reduce coolant flow and heating effectiveness.*


-  Heater is mounted directly to the engine.

*Engine vibration will damage the heater.*

-  Heater is not mounted at least 6 inches (15 cm) below the water jacket.

*A heater mounted too high will restrict coolant flow and reduce heating effectiveness.*

#### SUPPLY PORT

-  **Supply** port is installed toward the rear of the engine.

*A supply port mounted too close to the rear of the engine will reduce heating effectiveness.*


-  **Supply** port isolation valve is closed.

*Operating the heater without the presence of coolant will cause overheating and damage the heater.*

#### HOSES & PORTS

-  **Return** hose is kinked or damaged.

*Kinked or damaged hoses will reduce coolant flow.*

-  **Return** hose does not continuously rise to the port.

*A return hose that does not continuously rise may create high points, restricting coolant flow.*

-  **Supply** hose is unnecessarily long.

*Unnecessarily long hoses may create dips and bends, collecting air bubbles and restricting coolant flow.*

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